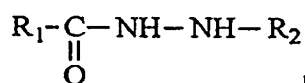


## CLAIMS

1. A stabilizing composition for chlorine-containing polymers free from metal stabilizers based on

□ one or more hydrazides compounds having the following formula I:



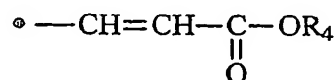
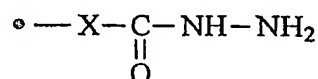
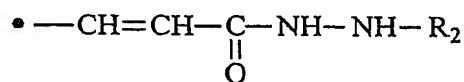
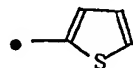
Formula I

where :

R<sub>1</sub> is

- a C<sub>1</sub>-C<sub>30</sub> alkyl group (linear or ramified), a C<sub>2</sub>-C<sub>30</sub> alkyl group mono or polyunsaturated, C<sub>1</sub>-C<sub>30</sub> alkyl group containing heteroatoms, C<sub>1</sub>-C<sub>30</sub> alkyl group substituted by one or more phenyl groups (substituted or not), or by an epoxy function, or by a cycloaliphatic or heterocyclic group, or by halogen atom(s) or by a hydroxy or an alkoxy group.

- a phenyl, benzyl, naphthyl, toluyl group substituted by -OH, -Cl, -alkoxy, -alkyl, -cycloalkyl, -COOR ou OCOR (where R is a C<sub>1</sub>-C<sub>12</sub> alkyl group)



- C<sub>6</sub>H<sub>5</sub> - (CH<sub>2</sub>)<sub>n</sub> - with n varying from 1 to 5

- -NH-NH<sub>2</sub>



R<sub>3</sub>, R<sub>4</sub> is

- \* a C<sub>1</sub>-C<sub>30</sub> alkyl group (linear or ramified), a C<sub>2</sub>-C<sub>30</sub> alkyl group mono or polyunsaturated, C<sub>1</sub>-C<sub>30</sub> alkyl group containing heteroatoms, C<sub>1</sub>-C<sub>30</sub> alkyl group substituted by one or more phenyl groups (substituted or not), or by an epoxy function, or by a cycloaliphatic or heterocyclic group, or by halogen atom(s) or by a hydroxy or an alkoxy group,

\* a phenyl, naphthyl, phenyl group substituted by -OH, -Cl, alkoxy, alkyl, cycloalkyl, -COOR or OCOR (where R is a C<sub>1</sub>-C<sub>12</sub> alkyl group)

X is \*a C<sub>1</sub>-C<sub>30</sub> alkylene group (linear or ramified), a C<sub>2</sub>-C<sub>30</sub> alkylene group mono or polyunsaturated, C<sub>1</sub>-C<sub>30</sub> alkylene group containing heteroatoms, C<sub>1</sub>-C<sub>30</sub> alkylene group substituted by one or more phenyl groups (substituted or not), or by an epoxy function, or by a cycloaliphatic or heterocyclic group, or by halogen atom(s) or by a hydroxy or an alkoxy group.

\*a phenylene (in ortho, meta, para position), naphthylene, phenylene group substituted by -OH, -Cl, alkoxy, alkyl, cycloalkyl, -COOR or OCOR (where R is a C<sub>1</sub>-C<sub>12</sub> alkyl group)

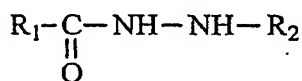
R<sub>1</sub> and R<sub>2</sub> can be linked by a covalent bond when R<sub>1</sub> = -CH=CH- and R<sub>2</sub> = -CO- (ketonic function)

□ and at least one of the following compound as co-stabiliser:

- one polyol and/or disaccharide alcohol,
- one perchlorate compound
- one glycidyl compound
- one layered lattice compound (hydrotalcite),
- one zeolite compound,
- one phosphite compound,
- one beta-diketone and/or beta ketoester,
- one mercaptocarboxylic ester,
- one metal soap.

2. A stabilizing composition as claimed in claim 1 based on

□ one or more hydrazides compounds having the following formula I:

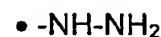
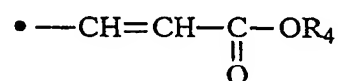
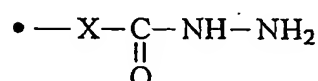
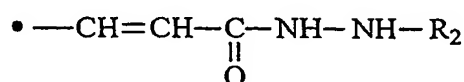
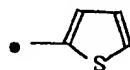


Formula I

where :

R<sub>1</sub> is • a C<sub>1</sub>-C<sub>30</sub> alkyl group (linear or ramified), a C<sub>2</sub>-C<sub>30</sub> alkyl group mono or polyunsaturated, C<sub>1</sub>-C<sub>30</sub> alkyl group containing heteroatoms, C<sub>1</sub>-C<sub>30</sub> alkyl group substituted by one or more phenyl groups (substituted or not), or by an epoxy function, or by a cycloaliphatic or heterocyclic group, or by halogen atom(s) or by a hydroxy or an alkoxy group,

• a benzyl, naphtyl, toluyl group, optionally substituted by -OH, -Cl, -alcoxy, -alkyl, - cycloalkyl, -COOR or OCOR (where R is a C<sub>1</sub>-C<sub>12</sub> alkyl group) or a phenyl group optionally substituted by -OH, -Cl, -alcoxy, -alkyl, - cycloalkyl or OCOR (where R is a C<sub>1</sub>-C<sub>12</sub> alkyl group)



R<sub>3</sub>, R<sub>4</sub> is \* a C<sub>1</sub>-C<sub>30</sub> alkyl group (linear or ramified), a C<sub>2</sub>-C<sub>30</sub> alkyl group mono or polyinsaturated, C<sub>1</sub>-C<sub>30</sub> alkyl group containing heteroatoms, C<sub>1</sub>-C<sub>30</sub> alkyl group substituted by one or more phenyl groups (substituted or not), or by an epoxy function, or by a cycloaliphatic or heterocyclic group, or by halogen atom(s) or by a hydroxy or an alcoxy group.

\* a phenyl, naphtyl, phenyl group substituted by -OH, -Cl, alcoxy, alkyl, cycloalkyl, -COOR or OCOR (where R is a C<sub>1</sub>-C<sub>12</sub> alkyl group)

X is \*a C<sub>1</sub>-C<sub>30</sub> alkylene group (linear or ramified), a C<sub>2</sub>-C<sub>30</sub> alkylene group mono or polyinsaturated, C<sub>1</sub>-C<sub>30</sub> alkylene group containing heteroatoms, C<sub>1</sub>-C<sub>30</sub> alkylene group substituted by one or more phenyl groups (substituted or not), or by an epoxy function, or by a cycloaliphatic or heterocyclic group, or by halogen atom(s) or by a hydroxy or an alcoxy group.

\*a phenylene (in ortho, meta, para position), naphtylene, phenylene group substituted by -OH, -Cl, alcoxy, alkyl, cycloalkyl, -COOR ou OCOR (where R is a C<sub>1</sub>-C<sub>12</sub>alkyl group)

$R_1$  and  $R_2$  can be linked by a covalent bond when  $R_1 = -CH=CH-$  and  $R_2 = -CO-$  (ketonic function)

□ and at least one of the following compound as co-stabiliser:

- one polyol and/or disaccharide alcohol,
- one perchlorate compound
- one glycidyl compound
- one layered lattice compound (hydrotalcite),
- one zeolite compound,
- one phosphite compound,
- one beta-diketone and/or beta ketoester,
- one mercaptocarboxylic ester,
- one metal soap,

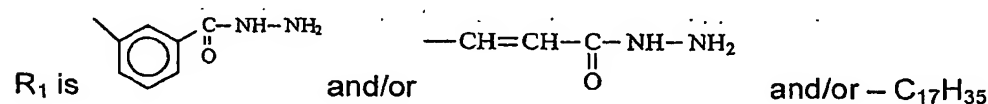
3. A stabilizing composition as claimed in claim 1 or 2, where at least one hydrazide is such as:

$R_1$  is \*a  $C_1$ - $C_{17}$  alkyl group, e.g. methyl, butyl, octyl, ethyl-2-hexyl, stearyl, lauryl, \*X CO NHHN $_2$  where X is  $C_1$ - $C_{17}$  alkylene group e.g. methylene, butylene, octylene, ethyl-2 hexylene, stearyl, dodecylene, or a 1,3-substituted phenylene group

\* a phenol substituted in ortho position, a benzenic cycle, a naphthol, a cyclo- S pentadiene-2,4

$R_2$  is \*H or COR $_3$  with  $R_3$  is preferably chosen between  $C_1$ - $C_{17}$  alkyl group, e.g. methyl, butyl, octyl, ethyl-2-hexyle, stearyl, lauryl, benzenic ring.

4. A stabilizing composition as claimed in anyone of claim 1 to 3, where at least one hydrazide is such as:



and R<sub>2</sub> is hydrogen.

5 5. A stabilizing composition as claimed in anyone of claim 1 to 4 substantially free from metal, where at least one co-stabiliser is chosen from hydrotalcite and/or trimethylolpropanol and/or zeolite P and/or perchlorate compound and/or phosphite and/or epoxidized soya bean oil and/or beta-dicarbonyl compounds.

6. A composition as claimed in anyone of claim 1 to 4 substantially free from metal, comprising at least one zinc carboxylate and/or alkali metal carboxylate (especially calcium stearate) and/or alkaline earth metal carboxylate and/or aluminum carboxylate.

10 7. A stabilizing composition as claimed in anyone of claim 1 to 6, where it further contains one or more stabilizers, processing aids, lubricants, plasticizers, pigments, fillers, epoxidized fatty acid esters, antioxidants, UV absorbers and light stabilizers, optical brighteners, impact modifiers and processing aids, gelling agents, antistats, biocides, fungicides, metal passivators, flame retardants and  
15 blowing agents, antifog agents, compatibilizers and/or antiplateouts agents.

8. A stabilizing composition as claimed in claim 7 where the stabilizer system is particularly chosen among CaZn or BaZn systems, tin systems, amino and thiouracils systems, latent mercaptide systems, tris (2-hydroxyethyl) isocyanurate, alphaphenyl indole, pyrrolidines.

20 9. A stabilizing composition as claimed in anyone of claim 1 to 8 where at least one part of the chlorine containing polymer is a recycled one.

10. A stabilizing composition as claimed in anyone of claim 1 to 9 where the chlorine-containing polymer is PVC, such as PVC homopolymer, post chlorinated PVC and/or PVC copolymers.

25 11. A stabilizing composition as described in anyone of claim 1 to 10 for manufacturing of pipes or fittings, preferably free from metal stabilizer(s)..

12. A stabilizing composition as described in anyone of claim 1 to 10 for manufacturing of compact or foamed sheets, films (rigid or flexible), profiles, preferably free from metal stabilizer(s).

30 13. A stabilizing composition as claimed in anyone of claim 1 to 10 where the use level is between 0.2 to 5, and particularly from 1 to 2 phr, preferably free from metal stabilizer(s)..